

Contract No. F33657-92-2055/0048  
CDRL No. A009, Data Item DI-MGMT-80057  
SID/MR-94/0024

(Unclassified)

# TASK ASSIGNMENT PLAN

for

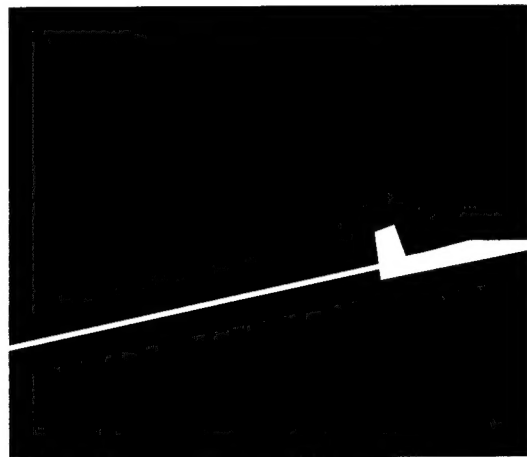
## UPDATES AND ENHANCEMENTS TO FAMMAS AND WINLAM

Prepared for  
HQ USAF/LGSI  
PENTAGON  
Washington, DC 20330

8 July 1994

Prepared by  
Synergy, Inc.  
1763 Columbia Road, NW  
Washington, DC 2009-2834

Submitted by  
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5100 Springfield Pike, Suite 110  
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Supportability Investment Decision Analysis Center

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6. AUTHOR(S)  Faragher, Bill Reed, Raymond L.					
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES)  Synergy, Inc. 1763 Columbia Rd, NW Washington, DC 20009				8. PERFORMING ORGANIZATION REPORT NUMBER  SID12156	
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13. ABSTRACT (Maximum 200 words)  This Task Assignment Plan will explain how Synergy, Inc. will fulfill the requirement to maintain and continue to develop a suite of logistics capability assessment models. The task will involve researching, developing, and installing a maintenance function in FAMMAS and revising and updating the maintenance function in the LAMs, modifying the allocation methodology in FAMMAS to accommodate the Banding concept for RSD spares obligation authority, and modifying the LAMs output to make it compatible with the Theater Warfare model. The task, will also involve developing the capability to assess the LANTIRN module using the LAMs technology, and expanding ELAM to include the ability to assess additional engines.					
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8 July 1994

SIDAC Special Projects Manager  
SIDAC  
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Dear Special Projects Manager,

Contract F33657-92-D-2055  
Delivery Order No. 48  
CDRL A009, Data Item MGMT-80057

Enclosed is the Task Assignment Plan for *Updates and Enhancements to FAMMAS and WINLAM* required under the above referenced contract.

If you have questions, please contact me at (202)232-6261.

Sincerely,

A handwritten signature in black ink, appearing to read "James A. Lutz", is written over a horizontal line.

James A. Lutz  
Task Leader

Enclosures

Contract No. F33657-92-D-2055  
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**TASK ASSIGNMENT PLAN**  
**on**  
**UPDATES AND ENHANCEMENTS TO FAMMAS AND WINLAM**

**INTRODUCTION**

The "Updates and Enhancements to FAMMAS and WINLAM" will involve one task, which will consist of several subtasks. The contractor will fulfill the requirement to maintain and continue to develop a suite of logistics capability assessment models. The models are used to assess the peacetime readiness and wartime sustainability expected as a result of past, current, and projected investments in buy and repair of reparable and consumable spares. More specifically, the task will involve researching, developing, and installing a maintenance function in FAMMAS and revising and updating the maintenance function in the LAMs, modifying the allocation methodology in FAMMAS to accommodate the Banding concept for RSD spares obligation authority, and modifying the LAMs output to make it compatible with the Theater Warfare model. The task will also involve developing the capability to assess the LANTIRN module using the LAMs technology, and expanding ELAM to include the ability to assess additional engines.

**GOALS AND OBJECTIVES**

Synergy will modify the FAMMAS, ELAM, and WINLAM models, expanding the capability of these models to improve the accuracy of the peacetime and wartime logistics assessments they provide in support of the WSPAR, SEMR, and POM programs.

**TECHNICAL APPROACH**

The work breakdown structure (WBS) shown in Figure 1 defines the key elements of the technical subtasks to be accomplished in the performance of Task 1.

Task 1: Updates and Enhancements to FAMMAS and WINLAM

Task 1a: Synergy will develop a maintenance function for FAMMAS and update the existing maintenance function for the LAMs. The FAMMAS maintenance function will address the relationship between resources, policies, and peacetime readiness. The LAMs maintenance function will be revised and expanded to reflect the results of the AFLMA assessments of the LAMs' maintenance algorithms. The methodology will address the relationship between maintenance resources and wartime sortie generation capability under varying maintenance policies and operational conditions.

The task will require visits to ACC and AMC headquarters during the research phase. This phase will include collecting data, meeting with experts on Air Force organizational maintenance, and becoming familiar with current research efforts. This research will result in the delineation of model requirements for the two applications. Next, a set of algorithms will be developed and implemented as prototype models using a quick development tool such as Quattro Pro. The prototypes will provide a means of testing the validity and logical consistency of the methodology and will lead to a set of specifications for model implementation. Using these specifications, code will be written to implement the maintenance functions in FAMMAS and the LAMs programs. Since all updates/modifications must meet Air Force standards for verification, validation, and accreditation, Synergy will provide a plan to the Air Force for demonstrating how these will be met. Upon approval of the plan, Synergy will test, verify and validate the program modifications to ensure the accuracy and validity of the algorithms. Finally, Synergy will produce the required documentation, including a Technical Report and updated versions of the Functional Description and User's Manuals.

Task 1b: Synergy, Inc. will research, develop, and incorporate a LANTIRN module in WINLAM. The availability of pertinent data associated with the LANTIRN system will first be investigated. Based upon the results of this research, a methodology will be developed for assessing the impact on readiness and sustainability of deficiencies in LANTIRN inventories, spares support, and maintenance support. Synergy will apply the knowledge gained in designing a peacetime availability calculator and a wartime integrator use for the ELAM module in developing the LANTIRN assessment module.

Synergy shall test, verify and validate all updates or modifications to ensure the accuracy of the algorithms. All updates/modifications must meet AF/XOM standards for Verification, Validation, and Accreditation. The contractor shall provide a plan for demonstrating how these standards will be met. Finally, Synergy shall produce any documentation required such as user manuals or programmer guides.

#### Task 1c: Incorporate 9 Aircraft Engines in ELAM

The engines to be integrated into ELAM have been designated by SA-ALC/LR in conjunction with HQ USAF/LGMY. The first 9 engines to be implemented are:

-F110	-TF39
-T56	-F101
-TF30	-TF34
-TF33	-J85
-J69	

Synergy will incorporate these engines into the ELAM Module through a process of research, design, testing, and validation. Synergy will modify the structure and/or the algorithms of the existing ELAM if the research deems necessary. Synergy will also update the Files Management System (FMS) with the appropriate data from each new engine incorporated into ELAM, update all documentation, provide training for all new users of ELAM, and deliver the updated model to all engine managers.

The incorporation of these engines into the Engines Logistics Assessment Model will be accomplished in two general phases. In Phase 1 preliminary research will be conducted on all candidates for incorporation. During this time Synergy will gather all data needed to assess each engine, determine which engines can be grouped together for incorporation, and uncover any economies of scale in the incorporation process. Phase 2 will involve the actual incorporation of new engines into the model. This phase can be broken down into three tasks: Additional Research, Design/Coding, and Testing/Validation. Each engine will undergo this process in phase 2. Some engines may undergo this process simultaneously if certain groups of engines demonstrate sufficient similarities.

#### Task 1d: This task consists of three elements:

- 1.) Integration of TLAM with the Theater Warfare model.
- 2.) Modification of WINLAM to generate aggregated results in the format required for POM exhibits.
- 3.) Inclusion of the capability in FAMMAS to accommodate banding for RSD spares.

Synergy will modify the TLAM calculator to provide a calibration file in a format compatible with the Theater Warfare (TW model). This file, when accessed by the TW model, will provide a logistics constraint in the TW model assessments consistent with the WSPAR assessments currently performed by the SPDs. Synergy will first research the systems structures to determine how to best proceed in the integration process. The contractor shall then update the TW model calculator to ensure it is compatible with the current version of WINLAM.

Synergy will develop and implement in WINLAM the capability to perform assessments of multiple weapon systems within a single run. The modification will allow the program to execute the selected weapon system assessments in sequence and aggregate the results in the form necessary for use in POM exhibits. A mechanism will be developed to cycle through the weapon systems within WINLAM and the WINLAM output generator will be modified to include POM summary data (cumulative sorties required and flown by period). This will allow the POM analysts to produce numeric and graphical charts with significantly less time and effort.

Synergy will modify FAMMAS to allow the user to allocate RSD obligation authority among weapon systems on the basis of banding priorities. The mechanism will utilize the current year's requirements and the banded allocations for the current year's funding and apply the appropriate proportions to determine funding allocations for each successive year of the analysis period.

Synergy shall test, verify and validate all updates or modifications to ensure the accuracy of the algorithms. All updates/modifications must meet AF/XOM standards for Verification, Validation, and Accreditation. The contractor shall provide a plan for demonstrating how these standards will be met.

## **PROJECT SCHEDULE AND MILESTONES**

The WBS in figure 1 represents the contractor's proposed timeline for accomplishing the tasks associated with the statement of work. Synergy will apply the most experienced personnel on this project and will produce the best products possible within the time and funds allocated by the government. The Synergy program manager will prioritize the efforts for the tasks in order to make the most efficient and effective use of available resources.

## **DELIVERABLES**

The following is a list of deliverables that will be submitted for the efforts performed under Task 1:

- (1) Final technical report on the task (CDRL A001). This report will present the results of the research and analysis performed in Task 1.
- (2) Periodic progress and status reports submitted every thirty (30) days throughout the duration of the contract (CDRL A004). These reports will keep the SIDAC COTR informed of the progress of the task on a monthly basis.
- (3) Software User's Manual to aid in the instruction and use of the software (CDRL A006).
- (4) Updated Functional Description (CDRL A005).
- (5) Computer Program End Item Documentation, the software necessary to complete the task (CDRL A012).
- (6) Task Assignment Plan (CDRL A009). This plan, presented in this document, covers the objectives, technical approach, and schedule for performance of the statement of work.

## **PROJECT STAFFING AND EXPERIENCE**

This project will be staffed with extremely well qualified personnel. The following summarizes the education, capabilities, and experience of key personnel.



Mr. James A. Lutz, Program Manager, Ph.D. program in Mathematics/ graduate studies in operations research and statistics. He has over 20 years experience in logistics management, capability assessment, program and budget analysis, and operations analysis. Mr. Lutz serves on Synergy's Operations Management Committee which directs the performance of work on all Synergy contracts. He specializes in the development and application of quantitative models for analysis of policies in logistics management, budgeting, capability assessment, and reliability and maintainability.

Mr. Raymond L. Reed, Sr. Logistics Management Specialist, M.S. Organic Chemistry. Mr. Reed has over 20 years experience in Air Force logistics. His areas of expertise include logistics management, tactical systems analysis, and acquisition management. He currently serves as the program manager for development and implementation of new parametric/interactive models, designed to perform logistics resource assessments of the U.S. Air Force's air mobility and air combat weapon systems.

Mr. William E. Faragher, Sr. Scientist, M.A. Mathematics. Mr. Faragher has over 35 years experience in operations research, and logistics analysis. He is responsible for the software development for a suite of logistics assessment models designed for estimating the impact of budget decision on aircraft readiness and sustainability. He directed the development of a data base management system that imports data from a variety of sources and generates a set of output files for use in Synergy-developed logistics assessment models.

Mr. Glenn L. Archer, Jr. Logistics Management Specialist, B.A. Economics. Mr. Archer is the supervisor for all O&M assessments for Air Force and Army. He is responsible for completing the development of the Engine Logistic Assessment Model, which provides the Air Force with projections concerning the health of their engines inventory. He is responsible for designing, testing, and delivering this model to HQ USAF/LGSI and SA-ALC/LPF.

#### **POINT OF CONTACT**

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# FIGURE 1 - Work Breakdown Structure

